

**Amendments to the Claims:**

1. (Currently Amended) Apparatus for the measurement of the total internal resistance of fuel cells and fuel cells cell stacks comprising:

an electronic load system ~~which comprises~~ having an input unit generating an input pulse, a driver for the control of the input pulse, a MOSFET module ~~comprising~~ having at least one MOSFET device for ~~the generation of a short circuit in a fuel cell~~ receiving a signal from the driver at a gate module of the MOSFET device, and a bank of selectable resistors; and

and a measuring circuit ~~which comprises~~ having a shunt for ~~converting the fuel cell voltage into a current signal~~ generating a resistance upon receiving a current signal, a differential amplifiers amplifier for the current signal, and a differential amplifier for the a voltage signal signals, and a data acquisition system which receives the voltage signal and the current ~~signals~~ signal obtained by the differential amplifiers.

2. (Currently Amended) Apparatus according to claim 1, ~~characterized in that said~~ wherein the MOSFET module produces short circuit pulses ranging between ~~of~~ 0.1 ~~to~~ and 100 msec.

3. (Currently Amended) Apparatus according to claim 1, ~~or 2 characterized in that~~ wherein the bank of selectable resistors is connected in series with the fuel cell.

4. (Currently Amended) Apparatus according to the ~~claims~~ claim 1, ~~to 3, characterized in that~~ further comprising a plurality of active differential probes ~~are included in~~ coupled to all the signal connections for the reduction of ambient noises.

5. (Currently Amended) Apparatus according to the ~~claims~~ claim 1, ~~wherein to 4, characterized in that~~ all connections and resistors are low inductive.

6. (Currently Amended) Apparatus according to the ~~claims~~ claim 1, wherein to 5,  
~~characterized in that~~ the load elements are connected to a safety system that limits current when  
local temperatures become too high.

7. (Currently Amended) ~~A Method~~ method for the measurement of the total internal  
resistance of fuel cells and fuel eells cell stacks, the method comprising ~~the following steps:~~

generating an input pulse;

causing a short circuit in the fuel cell by means of a MOSFET module;

taking the potential measurement of the fuel cell for resistance ~~calculation~~ when  
the open circuit ~~gets closed~~ of the fuel cell is closed;

obtaining the fuel cell current signal by means of a shunt; and

sending ~~the~~ a voltage signal and the current ~~signals~~ signal to an acquisition  
system.

8. (Currently Amended) ~~The Method~~ method according to claim 7, ~~characterized in~~  
~~that wherein~~ the reactance effect ~~on~~ in response to the short circuit in the fuel cell is enhanced by  
a bank of resistors.

9. (Currently Amended) ~~The Method~~ method according to claim 7, ~~wherein or 8,~~  
~~characterized in that~~ the MOSFET module remains active for even by the application of the a  
voltage corresponding to ~~of~~ a single fuel cell.

10. (Currently Amended) ~~The Method~~ method according to ~~the claims~~ claim 7,  
~~wherein to 9, characterized in that~~ the noise effects on measurement errors are reduced by means  
of the high current obtained.

11. (Currently Amended) ~~The Method~~ method according to ~~the claims~~ claim 7, ~~wherein to 10, characterized in that~~ current pulse trains are generated with an ON/OFF ratio and an operating frequency ~~settable~~ configurable by an operator.